



## Evaluation of bias in classification of perineal lacerations in vaginal delivery\*

*Avaliação do viés de classificação da laceração perineal no parto normal*

*Evaluación del sesgo en la clasificación de la laceración perineal en el parto normal*

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### ABSTRACT

**Objective:** To evaluate the bias of perineal laceration classification, between the researcher and nurse midwives who functioned as experts within the research project. **Methods:** The PDSA Cycle (Plan, Do, Study and Act) was used, with independent assessments of the perineal conditions of 26 women before (step 1) and after (step 2) presenting the research protocol to nurse midwives. Data were collected in 2007 at Amparo Maternal, an institution located in São Paulo-SP. Fourteen nurse midwives and one researcher participated. **Results:** In step 1, we obtained 72.7% repeatability and agreement between the researcher and nurse midwives. During step 2, these characteristics decreased to 66.7%, indicating the persistence of bias in determining the degree of perineal laceration. **Conclusion:** The lack of 100% repeatability and agreement between the researcher and expert nurse midwives highlights the need for adopting a more precise classification for the degree of laceration, through education of these professionals.

**Keywords:** Nurse-midwifery; Perineum; Lacerations/classification; Observer variation

### RESUMO

**Objetivo:** Avaliar o viés de classificação do grau de laceração perineal no parto normal entre pesquisadora e enfermeiras obstétricas atuantes como juízas na pesquisa. **Métodos:** Foi adotado o Ciclo PDSA (*Plan, Do, Study and Act*) realizando-se avaliações independentes das condições perineais de 26 mulheres, antes (etapa 1) e após a apresentação do protocolo de pesquisa às enfermeiras (etapa 2). Os dados foram coletados, no ano de 2007, no Amparo Maternal, instituição situada no Município de São Paulo-SP. Participaram 14 enfermeiras e uma pesquisadora. **Resultados:** Na etapa 1, ocorreram 72,7% de repetibilidade e concordância e, na etapa 2, estas características totalizaram 66,7%, indicando persistência do viés na classificação do grau de laceração perineal. **Conclusão:** A ausência de 100% de repetibilidade e concordância entre pesquisadora e enfermeiras juízas evidenciou a necessidade de adoção de uma classificação mais precisa do grau de laceração mediante capacitação dessas profissionais.

**Descritores:** Enfermagem obstétrica; Períneo; Lacerações/classificação; Variações dependentes do observador

### RESUMEN

**Objetivo:** Evaluar el sesgo en la clasificación del grado de laceración perineal en el parto normal entre investigadora y enfermeras obstétricas actuantes como jueces en la investigación. **Métodos:** Fue adoptado el Ciclo PDSA (*Plan, Do, Study and Act*) realizándose evaluaciones independientes de las condiciones perineales de 26 mujeres, antes (etapa 1) y después de la presentación del protocolo de investigación a las enfermeras (etapa 2). Los datos fueron recolectados, en el año 2007, en el Amparo Maternal, institución situada en el Municipio de Sao Paulo-SP. Participaron 14 enfermeras y una investigadora. **Resultados:** En la etapa 1, ocurrieron 72,7% repeticiones y concordancia y, en la etapa 2, estas características totalizaron 66,7%, indicando persistencia del sesgo en la clasificación del grado de laceración perineal. **Conclusión:** La ausencia del 100% de repeticiones y concordancia entre investigadora y enfermeras jueces evidenció la necesidad de adopción de una clasificación más precisa del grado de laceración mediante la capacitación de esos profesionales.

**Descriptorios:** Enfermería obstétrica; Períneo; Lacerações/classificação; Variaciones dependientes del observador

\* Study performed at the Spontaneous delivery Centre Amparo Maternal (CPN-AM), in São Paulo (SP), Brazil.

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## INTRODUCTION

Due to the implementation of spontaneous delivery care protocols based on scientific evidences, the routine episiotomy performance has been disappearing among healthcare professionals. Although in Latin America more than 90% of hospital spontaneous deliveries still use episiotomies, several European countries present rates below 10%<sup>(1)</sup>.

The strict use of episiotomies increases the probability of preserving the perineal integrity, but higher rates of spontaneous lacerations may occur. Such lacerations are classified through degrees, considering the affected tissues. First degree lacerations affect the skin and mucosa; Second degree ones extend to the perineal muscles, and third degree lacerations reach the anal sphincter muscles. Some authors also consider a fourth degree, when the laceration reaches the anal mucosa<sup>(2)</sup>.

Nevertheless, the perineal laceration classification also involves several variables related to the parturient and to the professional. As to women, there are individual variations to the vulvoperineal anatomical structure, such as the subcutaneous and muscle tissues thickness, the colour and the local bleeding during birth. The number of lacerations, their location and format may impact on their classification, as well as the lack of tested and standardized instruments that reduce subjectivity and uncertainty when assessing them<sup>(3-5)</sup>.

With regard to professionals, their ability and experience are important so as to differ the tissues affected by the lacerations<sup>(6-7)</sup>. According to professional experience, another aspect to be considered is the tendency to, not intentionally, underestimate the laceration degree. Perhaps this can be attributed to the nurses and physicians' concern about always causing the least possible harm and bringing the highest benefits when giving care. Therefore, the laceration level assessment represents a challenge to the obstetric nurses and midwives care practice.

The present study was proposed in order to eliminate the preliminary stage of the research "Use of hyaluronidase in the prevention of perineal trauma in spontaneous delivery: a randomized clinical trial placebo-controlled double-blind study" so as to assure no biases when assessing the perineal conditions during birth. In this research, the primary outcomes were perineal integrity, spontaneous lacerations or episiotomy, and the secondary outcomes were the spontaneous laceration degree, either using the enzyme or placebo. Such outcomes were assessed immediately after the spontaneous delivery, in an independent way, by the researcher and judge nurses. It is relevant to highlight that a homogeneous classification of the perineal laceration degree is important not only to guarantee the

results consistency in the referred research, but also to indicate the appropriate behaviour when repairing the laceration, postpartum care, and preventing morbidities. Therefore, the present study objective was to assess the bias when classifying the perineal laceration degree in spontaneous deliveries, having the researcher and active obstetric nurses acting as judges for such.

## METHODS

The methodology called PDSA cycle was adopted and consists of a systematization method for experimental learning utilized in several areas, especially in enterprise activities<sup>(8)</sup>.

The method phases are: *Plan*, *Do*, *Study* and *Act*. During Planning, a learning objective is established and transformed in questions, whose predictions will be confronted to the results. Still during the Planning phase, a data collection plan is developed to answer the questions analytically. The Doing phase is meant for the experiment performance, upon data collection and pertinent observations regarding the planned learning. During the Studying phase, data and observations are analysed in order to reach a conclusion regarding the formulated questions, and the learning contents are proposed. At last, the Acting phase aims to put the knowledge acquired into practice. Follow up is performed, so as to plan new PDSA cycles.

In the present study, the *Plan* and *Do* phases are described in this section. The *Study* and *Act* phases correspond to the sections Results and Discussion, respectively.

### Plan

The questions to be answered and the respective predictions were: 1) Do different nurses assess a laceration type identically? 2) Are the judge nurses' assessments different from the researcher's assessment?

The predictions for these questions were: 1) No relevant difference is found among nurses, for the perineal laceration degree classification is part of such professionals' daily practice; 2) There might be a difference between the judge nurses' classifications and the researcher's, for she is not part of the institution nursing team.

Concerning prediction number 1, repetition was aimed, and in relation to number 2, biases were being searched for. Initially, the estimated sample was 20 spontaneous deliveries, with three nurses and the researcher's assessments for each one.

### Do

The study was performed at the Spontaneous delivery Centre Amparo Maternal (CPN-AM), located in São

Paulo (SP), between August and September 2007. At CPN-AM, all spontaneous deliveries are assisted by obstetric nurses. In this period, there were 1,841 spontaneous deliveries, with 79.7% spontaneous deliveries.

The population was comprised of women in similar situation to those who were part of the referred research. The data collection was performed in two stages: before and after the research protocol was presented to the obstetric nurses.

The sample was comprised of 11 and 15 women in each stage, respectively. The initial estimated sample was reduced because the bias item was identified in the results, indicating there was a disagreement.

According to plan, each participant was assessed three times for her perineal conditions by the nurses present at the time and by the researcher, independently. Fourteen nurses participated in the study along the two stages. The same nurses would be judges for the main research, which also took place in the institution the present study was performed.

The research protocol presentation, performed after the first stage, consisted of guidance and discussion sessions with the nurses, which took place in each shift, aiming to homogenize the perineal laceration degree classification. Those who assessed the perineal conditions differently from the researcher received individual guidance. Guidance was based on the literature<sup>(2)</sup>, and discussions about disagreement aspects, besides clarifications of the nurses' doubts.

The perineal assessment was performed immediately after the fetus was delivered, with the women in a semi-seated position, having their feet on the labor bed support. In order to inspect the perineum, spotlights, gloves, and sterilized gauze were utilized to clear the anatomical structures, thus allowing a better visualization.

A printed instrument was used to record the perineal conditions, and it contained the birth date, the parturient and nurse identification, and the perineal conditions, considering: intact perineum, 1st, 2nd, or 3rd degree lacerations.

Data were transcribed into a spreadsheet and analysed through the program *Minitab® for Windows*. An estimation of the agreeing assessments proportion among the judge nurses (repetition) and the proportion of agreement between the judges and the researcher (bias) were analysed with the respective reliability intervals (RI95%). Data were analysed separately for each stage of the study.

The research "Use of hyaluronidase in the prevention of perineal trauma in spontaneous delivery: a randomized clinical trial placebo-controlled double-blind study", of which the present study is part, was approved by the Research Ethics Committee of

Universidade de São Paulo Nursing College. Women and nurses' participation was voluntary, upon the signature of the Informed Consent Term.

## RESULTS (Study)

The results are presented in a descriptive way, through Illustrations 1 and 2, separately for each stage of the study.

- First Stage (before the protocol presentation) (Figure 1)

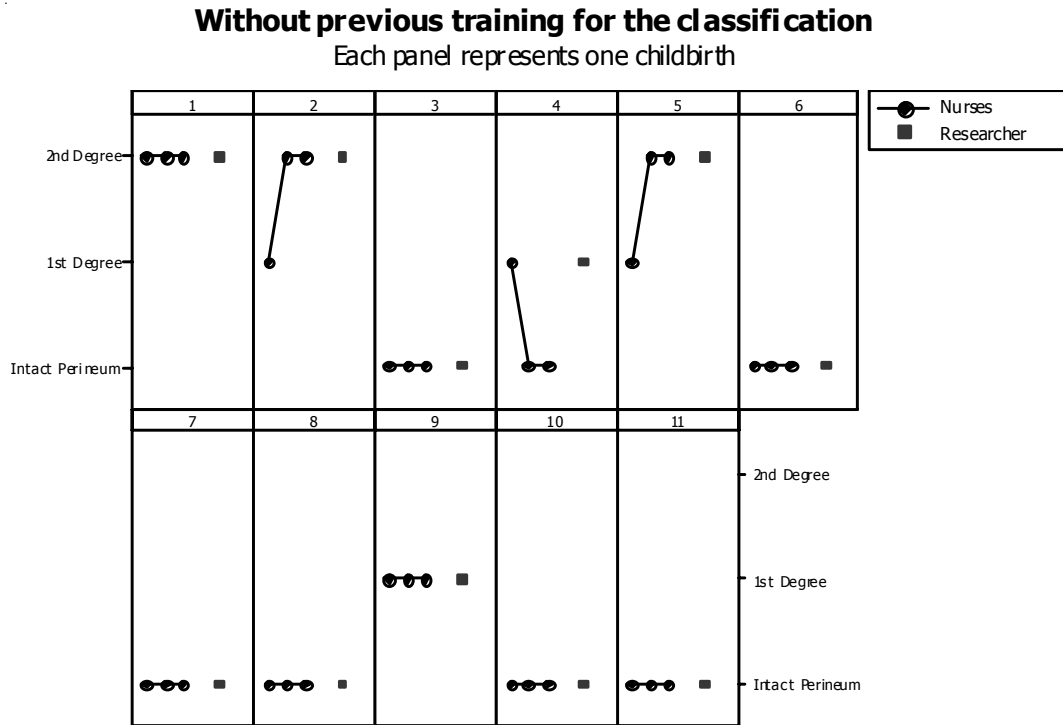
As to the item "repetition", results regarding 11 women and 11 nurses indicated that in eight spontaneous deliveries all judge nurses agreed upon the matter, with 72.7% (39.0-94.0 IC95%) repetition of agreement with the researcher. As to the item bias, there was a disagreement regarding the laceration degree (either 1<sup>st</sup> or 2<sup>nd</sup>) for two spontaneous deliveries, and between perineal integrity and 1<sup>st</sup> degree laceration for one delivery.

The disagreements regarding the laceration degree for two spontaneous deliveries consisted of two judge nurses and the researcher's opinion – that it was a 2nd degree laceration – against one judge nurse's opinion – who classified it as 1st degree laceration (spontaneous deliveries 2 and 5). As to the other disagreement, one judge nurse and the researcher considered it a 1st degree laceration, while two judge nurses considered the perineum integrity had been preserved.

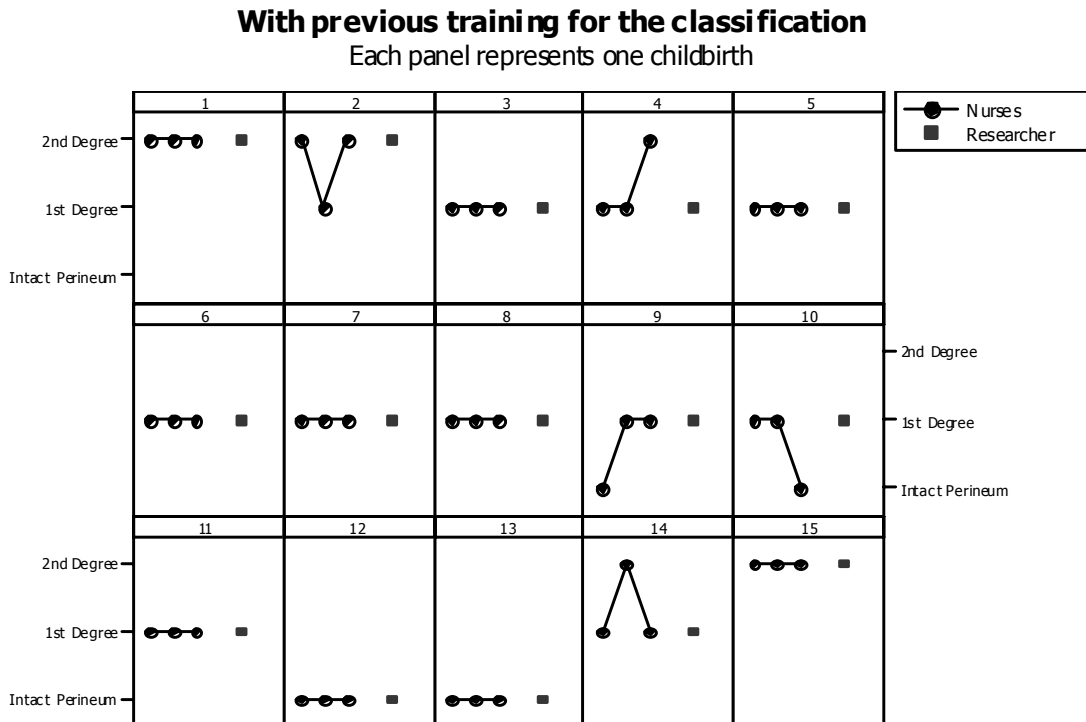
- Second stage (after the protocol presentation) (Figure 2)

As to the item repetition, results regarding 15 women and 11 nurses indicated that, for 10 spontaneous deliveries the judge nurses fully agreed upon the matter, with 66.7% (38.4-88.2 IC95%) repetition and agreement with the researcher. With regard to the bias item, there were disagreements concerning the laceration degree (1st or 2nd) for three spontaneous deliveries, and whether the perineum was intact or had 1st degree laceration for two spontaneous deliveries.

The researcher's opinion and two judge nurses' were the same regarding the laceration classification for 3 spontaneous deliveries where there were disagreements about the matter. The researcher and two judge nurses considered that spontaneous deliveries 4 and 14 presented 1<sup>st</sup> degree lacerations, while the nurse who disagreed considered it a 2nd degree laceration. The disagreeing nurse thought spontaneous delivery 2 presented 1st degree lacerations, while the other judge nurses and the researcher considered it a 2nd degree laceration. In two other cases (spontaneous deliveries 9 and 10), two judge nurses and the researcher considered the perineal trauma as 1st degree lacerations, while one judge nurse considered the perineum intact.



**Figure 1** – Comparison of 11 spontaneous deliveries classification, according to the perineal conditions, São Paulo – 2007



**Figure 2** – Comparison of 15 spontaneous deliveries classification, according to the perineal conditions, São Paulo – 2007

**DISCUSSION (Act)**

The present study results answer the initially formulated question, indicating that nurses do not always

classify spontaneous delivery perineal outcomes identically, although the perineum assessment is part of such professionals' daily care routine.

Although repetition and agreement have prevailed

between the nurses and the researcher throughout the 2 stages, for approximately two thirds of spontaneous deliveries (72.7% and 66.7%, for stages 1 and 2 respectively), there were also disagreements regarding the laceration degree and the perineum integrity.

The divergences in 8 out of 26 spontaneous deliveries, with under or super estimation of the perineal trauma can be attributed to:

- lack of protocol at the CPN-AP when assessing perineal laceration classifications;
- lack of instruments that favour an objective assessment, with standardized items;
- difficulties visualizing the perineal region properly due to parturients' bleeding, pain or discomfort; and
- different professional experiences and nurses updating.

Authors<sup>(9)</sup> have developed and tested a perineal trauma measurement instrument in 130 women who had spontaneous delivery, assisted in maternity wards in the United Kingdom, between the years 2000 and 2001. Data were collected with independent assessments from two midwives. The study verified that in 12 out of 24 lacerations classified as 1st degree lacerations, the perineal muscle tissue had been affected; moreover, one case recorded as 2<sup>nd</sup> degree laceration actually presented anal sphincter rupture. In the authors' opinion, there is a lack of comprehension regarding the perineal trauma classification and the adoption of assessment protocol. They recognize that the 2nd degree laceration assessment is more complex, for it is less noticeable and presents varied extension and depth, pointing out to the need for instruments that facilitate clinical application.

A study performed at a School Hospital in London analysed a spontaneous delivery perineal trauma assessment instrument, comprised of six parameters related to bleeding, size, format, and tissues involved in the trauma. Midwives, physicians and researchers assessed 52 women independently, and 75% agreement was reached (moderate level according to Kappa coefficient = 0.512) with regard to the muscle laceration. Authors considered that the adopted parameters should be amplified, suggesting the elaboration and validation of instruments with a comprehensive approach for a better perineal trauma classification<sup>(5)</sup>.

An example that can assist on the perineal trauma classification is the visual instrument adopted to assess 2,883 women, assisted in a School Hospital in Sweden, between 1995 and 1997. The instrument is comprised of 19 illustrations, numbered according to the laceration degree and its location in the vulvoperineal region. According to the authors, the appropriate perineal trauma classification is important to follow up its long-term repercussions<sup>(4)</sup>.

In order to incorporate the perineal trauma

assessment to nurses' care during spontaneous deliveries, it would be interesting if the instruments proposed for the data collection<sup>(10)</sup> included, besides the defining characteristics and related or risk factors, more information about the perineal trauma. Such data can assist on the identification of nursing diagnoses for parturients.

Only in the past decade were obstetric nurses given enough capacitation so as to assist spontaneous deliveries without the performance of routine episiotomies<sup>(6)</sup>. This change assumes such professionals' capacitation not only to prevent the spontaneous trauma, preserving the perineal integrity, but also to correctly assess and repair the lacerations that occur.

Upon the trauma results in the second stage of the present study, a capacitation program for the CPN-AM obstetric nurses was performed in order to provide guidance when assessing the perineal trauma after spontaneous delivery. Such program was developed through theoretical classes and taught by the coordinating obstetric nurse at the service to all nurses in the Centre. According to the PDSA methodology, this stage can be considered a new cycle.

One of the main implications for this practice, which resulted from the capacitation program, was the updating of the 3rd degree lacerations classification as one that affects the anal sphincter complex (3a – affects less than 50% of the external anal sphincter thickness; 3b – affects more than 50% of the external anal sphincter thickness; 3c – affects the internal anal sphincter)<sup>(11)</sup>. Since then, obstetric nurses at CPN-AM have adopted such classification, enhancing perineal trauma identification and repair, thus preventing more severe morbidities.

The main research data collection, whose results indicated full agreement between the researcher and the judge nurses when assessing the perineal outcome, was performed after such capacitation program.

It is worth emphasizing that besides being important in order to homogenize the perineal laceration degree classification, guaranteeing the referred research results consistence, the lacerations correct assessment is essential to indicate the appropriate conduct repairing the laceration, in postpartum care and morbidities prevention.

## CONCLUSIONS

When considering there was not 100% repetition (a situation where no nurses diverge among themselves when assessing) and agreement (a situation where all nurses agree with the researcher's assessment), the need for spontaneous delivery perineal trauma definition homegization, so as to reach a more precise laceration degree classification is necessary, through the judge nurses capacitation, and according to the research protocol.

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